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Correlation between the Sea Turtles and Shrimp Trawl Fishery in Thailand

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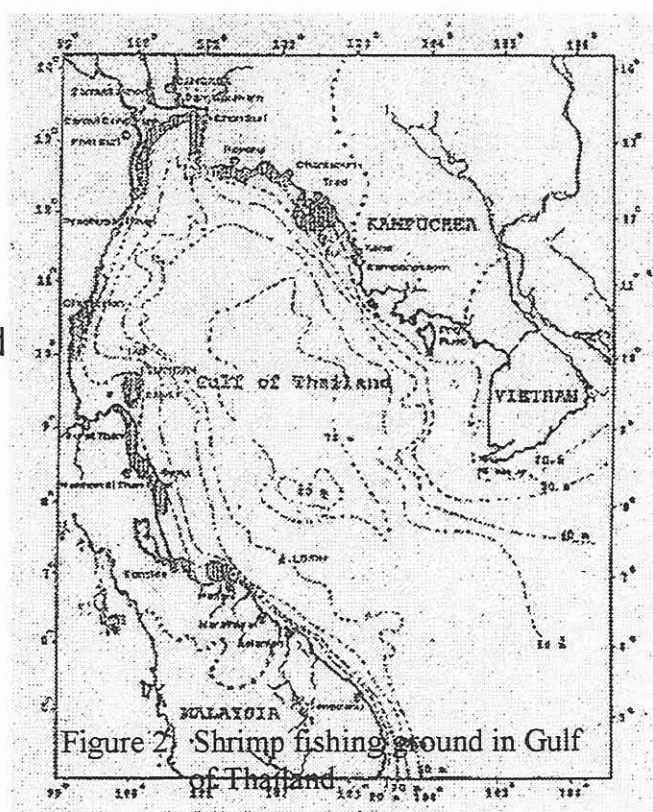
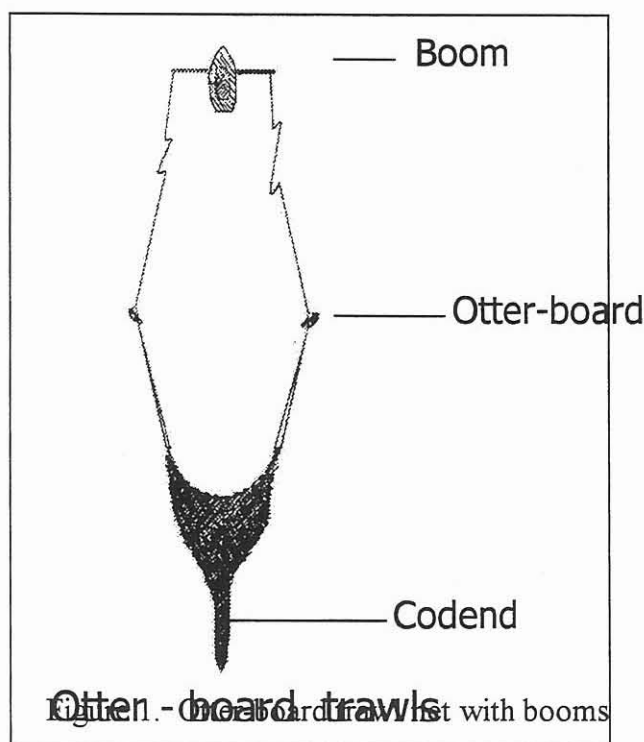
Abstract

Shrimp trawl fishery has been operated along the coastal area in Thai water. Otter-board trawl net with boom has been used in shrimp fishing vessel size range less than 14 meters in length. The catch compositions are large shrimp and small shrimp. Large shrimp mainly composed of *Penaeus merguensis*, *P. semisulcatus*, *P. monodon*, *P. latisulcatus*, *Metapenaeus ensis*, *M. affinis* and *M. intermedius*. Small shrimp mainly composed of *Metapenaeopsis spp.*, *Trachypenaeus spp.* and *Parapenaeopsis spp.* Sea bottom characteristics were analyzed with catch rate data to investigate the distribution of species. *P. merguensis* and *Metapenaeus spp.* were distributed in muddy area while *P. semisulcatus* and *P. monodon* were mainly found in muddy-sand area. *P. latisulcatus* was mostly found in sandy-mud or sandy area. *Metapenaeopsis spp.* was normally found in muddy-sand or sandy-mud area while *Trachypenaeus spp.* and *Parapenaeopsis spp.* will be found in muddy area. Furthermore, environmental information such as temperature, salinity, water depth, water current and wave of surface sea water will be used for further analysis. The objective of this study is to investigate the correlation between the sea turtle and shrimp trawl fishery. Hence, the results of tracking or migration path of sea turtle will be need and very important for this study.

Key words: Sea turtle, shrimp trawl fishery

Introduction

Shrimp trawl fishery in Thailand has been operated along the coastal area both of in the Gulf of Thailand and Andaman Sea. The fishing gear used is otter-board trawl net with boom in nighttime (Figure 1). The size of shrimp trawl fishing boat is normally less than 14 meters in length. Target species of this trawl is shrimp. However, others groups of species such as fishes, squids, cuttle-fishes and crabs are also in the catch composition. Trash fish is high amount and composed of small economic species. Shrimp trawl is prohibited to operated within 3,000 meters from shoreline and islands. Sea turtles are endanger species and has been protected by law. The incidental catch of sea turtles by trawl net has been found because the feeding area or migration path of sea turtle is overlapped with shrimp fishing ground. (Figure 2). However, this is still in question because of shrimp trawl net in nighttime or fish trawl net in daytime. Hence, the correlation between the sea turtle and shrimp trawl fishery has been studied by analysis of shrimp fishing ground, environmental information and migration path of sea turtle.

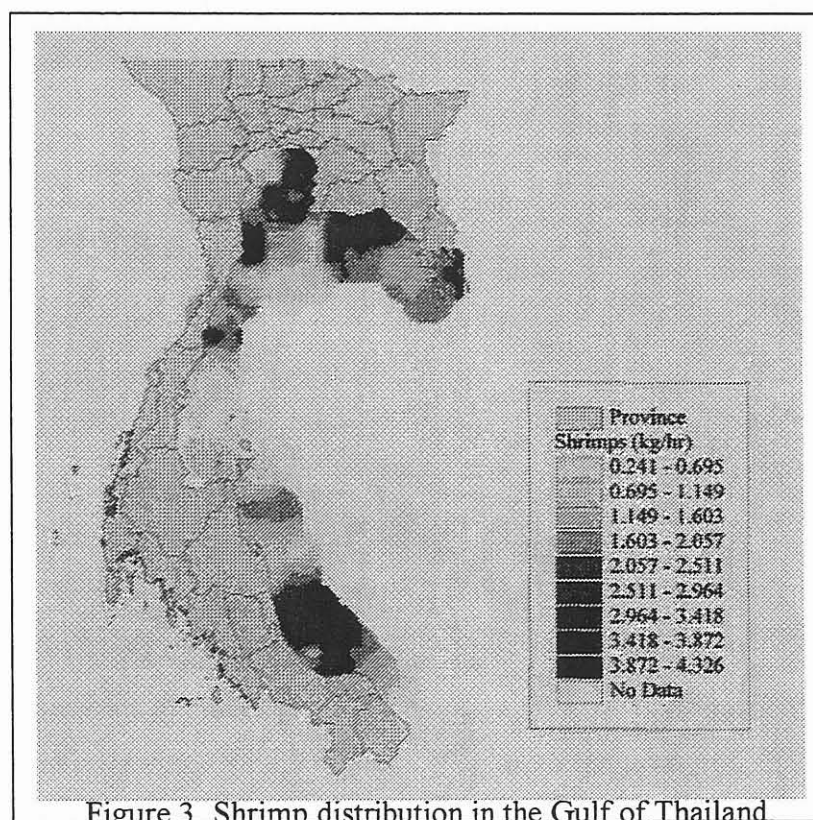


Methods.

The data used in this analysis are 1) Catch composition of shrimp from trawl survey by research vessel of Marine Fisheries Division, Department of Fisheries in 1995. 2) Environmental information from the Royal Thai Navy (Oceanographic Division, 1995) 3) Wave height and surface water current in 1999 from the Royal Thai Navy.

Results

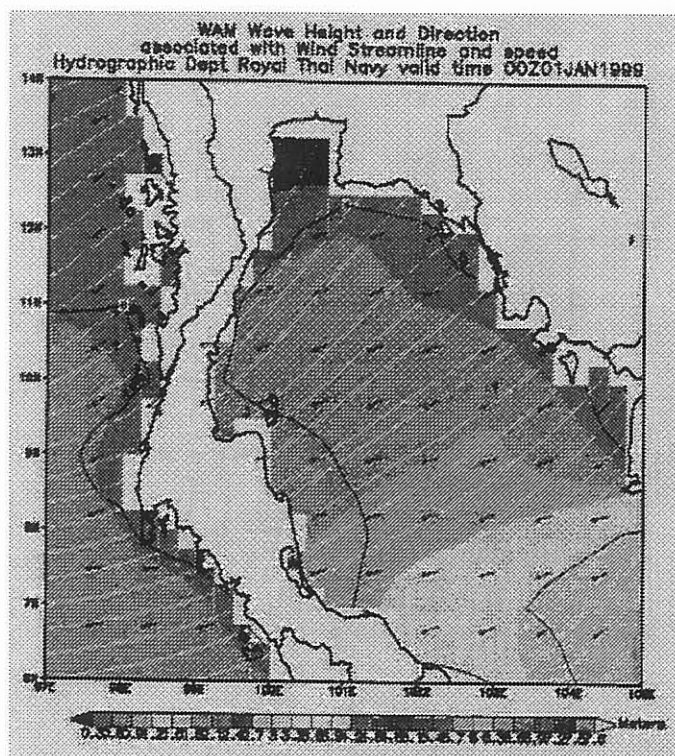
The Marine Fisheries Division, Department of Fisheries has monitored the distribution, abundance and change in species composition of shrimp from trawl net in the Gulf of Thailand from 1967 up to the present. Otter-board trawl net has been used as the standard fishing gear. The survey has been conducted in nighttime by grid sampling method. Shrimp distributed in the shallow water along the coastline in the water depth not more than 30 meters. High abundance was found in the eastern part of the gulf, in the inner gulf and in the lower part of the Gulf of Thailand (Figure 3).



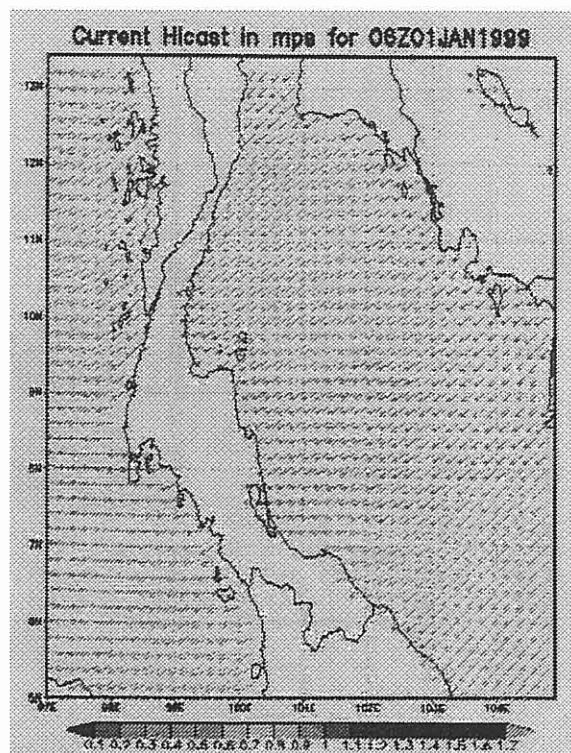
White shrimp (*P.merguensis*) and *Metapenaeus* spp. (*M.ensis*, *M.affinis* and *M.intermedius*) will distributed in muddy area especially in the inner gulf and the southern part. The fishing ground of Black tiger prawn (*P.monodon*) and Tiger prawn (*P.semisalcatus*) are

very wide. They like to live on muddy-sand area. Yellow shrimp (*P.latisulcatus* and *P.longistylus*) were found in sandy-mud and sandy area in the eastern part of the gulf and will be found very few in others area. For small shrimps, *Metapenaeopsis spp.* was normally found in muddy-sand or sandy-mud area while *Trachypenaeus spp.* And *Parapenaeopsis spp.* will be found in muddy area.

The environmental information are available such as depth of water, bottom topography, surface temperature, surface salinity, dissolve O₂ at sea surface, wave height and direction (Figure 4) and surface water current (Figure 5). The distribution of shrimp by species rather related with bottom topography, and water salinity. *P.merguensis*, *M.affinis* and *Trachypenaeus spp.* were found in the area which water salinity was low, especially near the mouth of river.



In the Gulf of Thailand and Andaman sea during northeast monsoon season.



of Thailand and Andaman sea during northeast monsoon season.

Discussion

In this progress report, the correlation between the sea turtle and shrimp trawl fishery can not be analyzed because the result of migration paths of sea turtle has not been finished. However, surface water current, wave height and direction should be the important for the

migration paths of sea turtle. From the night trawled monitoring survey by research vessel during 1967-1996, there was not any sea turtle in the catches (Marine Fisheries Division, 1997). Moreover, there was significantly no relation between sea turtle instating and number of shrimp trawlers in Choburi Province, east coast of Thailand (Sujittosalul T. and S. Sanaluk, 1997). This study will be continued by analysis of the data of shrimp fishing ground, environmental information concerned and migration paths of sea turtle to find out whether there is the correction between sea turtle and shrimp trawl fishery or not.

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